

4.—Descriptions of three new fishes from Western Australia

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Abstract

Three new species of marine fishes are described from coastal waters of Western Australia. Two of the species, *Ellerkeldia rubra* and *Anthias georgei* are serranids and the third, *Parapercis biordinis*, belongs to the Mugiloididae. The three species are illustrated and keys to the *Ellerkeldia* and *Parapercis* from Western Australia are provided.

Introduction

The most recent comprehensive listing of Western Australian fishes is that of Whitley (1948). He included approximately 740 species, but this work desperately needs to be updated. In recent years several authors including Mees (1959; 1960a and b; 1961; 1962; 1963; 1964; 1966); Scott (1959); and McKay (1963; 1964; 1966; 1967; 1969; 1970; 1971) have added about 200 additional records. Collections by J. B. Hutchins and the author from 1972 until the present time have contributed nearly 400 more. However, the latter collections remain largely unreported. These will be included in an annotated checklist of the fishes of Western Australia currently in preparation by the author. The present paper includes descriptions of three new species. The majority of specimens involved were located amongst large holdings of unsorted material during a re-organisation of the Western Australian Museum fish collection in 1975. In addition, three specimens, including the holotype of *Ellerkeldia rubra* were collected by the author at the Abrolhos Islands.

Measurements were made with dial calipers to the nearest 0.1 millimetre (mm). Standard length is abbreviated as SL. The counts and proportions which appear in parentheses under the description section for each species apply to the paratypes when differing from the holotype except for the single specimen of *Parapercis biordinis*, in which case the actual millimetric measurement is given.

Type specimens have been deposited at the Australian Museum, Sydney (AM); United States National Museum of Natural History, Washington, D.C. (USNM); and the Western Australian Museum, Perth (WAM).

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Family Serranidae

Ellerkeldia rubra n.sp.

(Fig. 1; Table 1)

Holotype.—WAM P25314-003, 71.0 mm SL, collected with multiprong spear off Beacon Island, Wallabi Group, Abrolhos Islands, Western Australia in 3-4 metres by G. R. Allen on 20 May 1975.

Paratypes.—AM I.18476-001, 59.7 mm SL, collected at Abrolhos Islands, Western Australia by A. Robinson, no other collecting data; USNM 214701, 67.5 mm SL, collected with bottom trawl approximately 40 nautical miles west of Bernier Island, Western Australia (25°59'S, 112°27'E) in 71 fathoms by R. George and crew of "Diamantina" on 8 October 1963; WAM P25226-001, 72.6 mm SL, collected with bottom trawl off Cape Inscription, Western Australia in 40 fathoms by Poole brothers aboard "Bluefin" on 9 October 1967; WAM P25311-007, 2 specimens, 29.2 and 49.6 mm SL, collected with rotenone in Goss Passage off Beacon Island, Abrolhos Islands, Western Australia in 30 metres by G. R. Allen on 18 May 1975.

Diagnosis.—A species of *Ellerkeldia* with the following combination of characters: soft dorsal rays 19; soft anal rays 8; tubed lateral-line scales 41-45; colour mostly pale with broad brown stripe on sides from snout to caudal base and series of brown spots and blotches on snout, interorbital, and nape.

Description.—Dorsal rays X, 19; anal rays III, 8; pectoral rays 15 (16); gill rakers on lower portion of first gill arch 8 + 4 to 5 rudiments; tubed lateral-line scales 44 (41 [1], 42 [2], 43 [2]); horizontal scale rows from lateral-line to base of middle dorsal spines 2-3; from lateral-line to anus 17.

Body ovate and compressed, the greatest depth 2.7 (2.5 to 2.8), head length 2.4 (2.2 to 2.4), both in standard length. Snout 3.9 (4.2 to 5.0), eye diameter 4.1 (3.8 to 4.0), interorbital width 8.4 (8.9 to 11.2), length of maxillary 2.4 (2.1 to 2.2), least depth of caudal peduncle 3.4 (3.2 to 3.8), length of caudal peduncle 4.1 (3.8 to 5.2), of

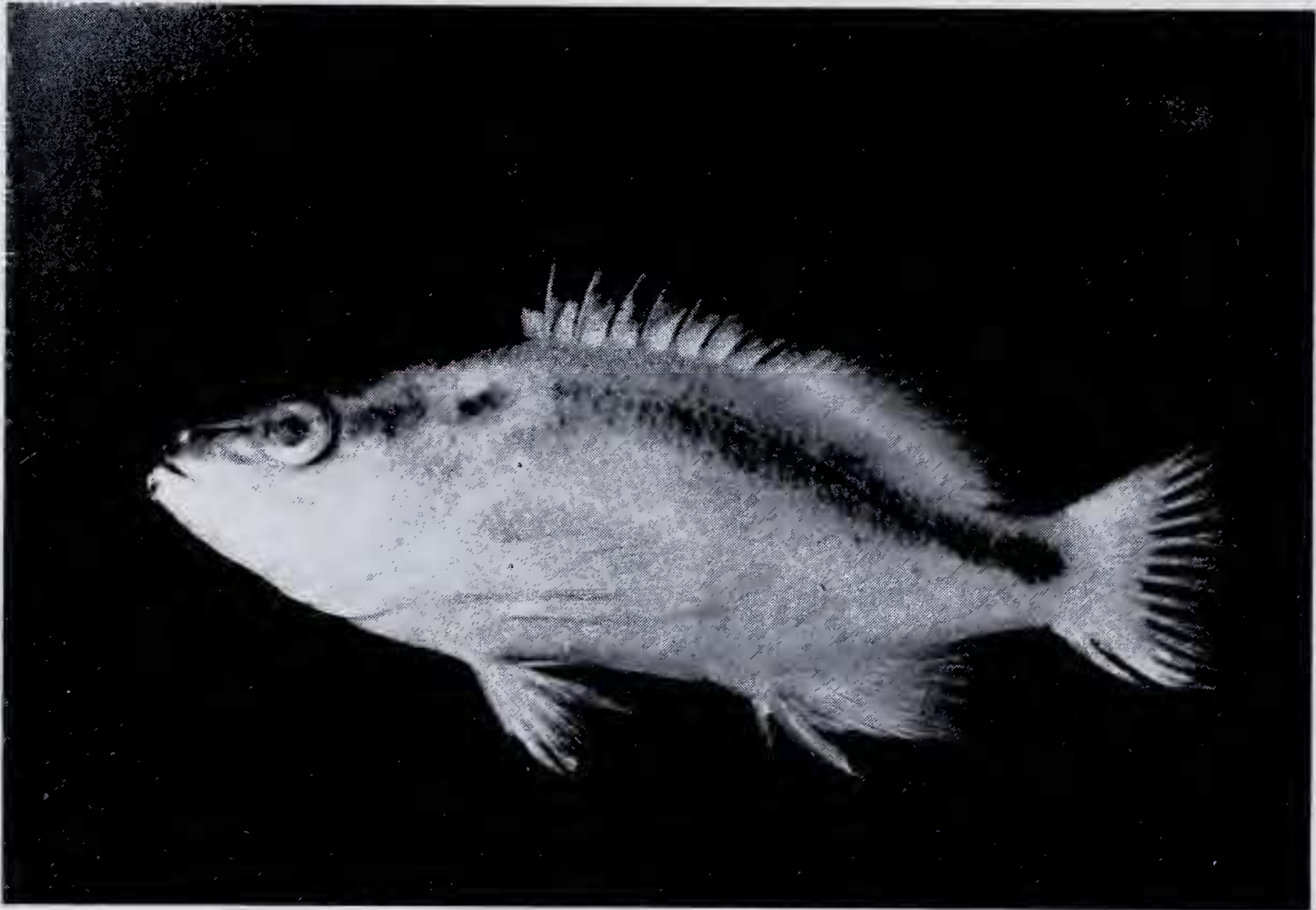


Figure 1.—*Ellerkeldia rubra*, holotype, 71.0 mm SL, Abrolhos Islands, Western Australia.

Table 1

Morphometric Proportions of Type Specimens of Ellerkeldia Rubra
(In thousandths of the standard length)

Characters	Holotype WAM P25314-003	Paratypes				
		WAM P25226-001	USNM 214701	AM 1.18476-001	WAM P25311-007	WAM P25311-007
Standard length (mm)	71.0	72.6	67.5	59.7	49.6	29.2
Greatest body depth	369	355	394	360	383	366
Head length	415	402	437	412	454	435
Snout length	106	96	89	94	91	103
Eye diameter	101	99	114	104	115	110
Interorbital width	49	41	44	47	40	45
Length of maxillary	194	168	200	198	192	199
Least depth of caudal peduncle	123	117	119	127	121	137
Length of caudal peduncle	101	99	84	107	101	103
Snout to origin of dorsal fin	397	406	406	399	395	387
Snout to origin of anal fin	687	694	726	717	726	678
Snout to origin of pelvic fin	411	415	433	404	440	394
Length of dorsal fin base	546	527	527	564	534	548
Length of anal fin base	183	178	178	183	173	205
Length of pectoral fin	293	307	324	305	341	342
Length of pelvic fin	197	204	233	226	222	240
Length of 1st dorsal spine	41	55	59	40	54	55
Length of 4th dorsal spine	120	152	156	134	151	137
Length of last dorsal spine	97	102	95	101	101	106
Tallest dorsal ray	169	179	190	171	171	188
Length of 1st anal spine	99	84	96	69	87	89
Length of 2nd anal spine	152	172	173	173	177	171
Length of 3rd anal spine	146	139	159	132	141	154
Longest anal ray	197	204	212	204	206	223
Length of caudal fin	207	241	246	224	242	267

pectoral fin 1.4 (1.3 to 1.4), of pelvic fin 2.1 (1.8 to 1.9), of first dorsal spine 10.1 (7.4 to 10.3), of fourth dorsal spine 3.5 (2.8 to 3.2), of last dorsal spine 4.3 (3.9 to 4.6), of longest soft dorsal ray 2.4 (2.2 to 2.6), of first anal spine 4.2 (4.5 to 6.0), of second anal spine 2.7 (2.3 to 2.7), of third anal spine 2.8 (2.8 to 3.2), of longest soft anal ray 2.1 (2.0 to 2.2), of caudal fin 2.0 (1.6 to 1.9), all in the head length.

Pair of nasal openings on each side of snout, anterior opening with dermal flap; mouth large, oblique, with lower jaw protruding slightly; supramaxillary present; lateral-line gradually ascending to within 2-3 scales below middle dorsal spines, then gradually descending to middle of side of caudal peduncle, proceeding to base of caudal fin; snout tip, lips, chin, most of dentary, isthmus, and maxillary naked; remainder of head and body with finely ctenoid scales; sheath scales covering about basal $\frac{1}{2}$ - $\frac{3}{4}$ of dorsal, anal, caudal, and pectoral fins; pre-orbital entire; preopercle with 3 antrorse spines on lower border and about 25 small serrae on posterior edge; subopercle with a few small serrae on postero-ventral border; opercle with 3 spines.

Upper and lower jaws with bands of depressible villiform teeth, narrowing in width posteriorly; in addition, two widely spaced tusk-like canines at front of lower jaw and 1-2 similar teeth about midway back on each dentary, upper jaw with pair of enlarged tusks anteriorly and several enlarged retrorse canines on either side of median diastema; vomer with patch of small conical teeth; palatines with small biserial conical teeth; length of maxillary 2.1 (2.1 to 2.4) in the head length.

Colour of holotype in ethyl alcohol; head and body generally pale (yellowish); faint brown stripe (about 3-4 scales wide) extending from snout tip (also on upper lip), interrupted by eye, then continuing along upper sides to base of caudal fin, pigmentation most intense just behind eye and on caudal peduncle; a pair of brown spots on anterior portion of upper and lower lips, these continuous with brown streak extending across side of snout to front corner of eye; diffuse broken brown stripe on mid-dorsal line from interorbital to occipital region, followed by a pair of short brown streaks, one on each side of mid-dorsal line, then an isolated brown spot on middle of nape and another at base of first dorsal spine; similar brown spot behind upper, posterior corner of each eye; small brown spot on anteriormost extension of isthmus; fins uniformly pale except basal part of first dorsal spine brown.

The paratypes exhibit the same basic pattern except on the 67.5 mm specimen the mid-dorsal stripe is not apparent except as an isolated streak on the post-interorbital. In addition, the broad stripe behind the eye has the appearance of two, large isolated blotches, one immediately above the preopercle opening and the other just above the opercle opening. The 59.7 mm paratype is much darker than the other specimens and the markings on the head are mostly obscured except the spots on the isthmus and lower lip.

Colour in life.—Head and body generally pinkish-red grading to darker red dorsally; lower portion of head, breast, and abdomen white; prominent red stripe from snout to eye, continued behind eye to upper portion of opercle and two short oblique bands of similar colour and width immediately behind, near upper corner of gill opening; diffuse, dusky brown band running longitudinally on upper sides from upper corner of gill opening to caudal base, more intense posteriorly, forming more or less isolated dark brown spot on caudal peduncle; fins pale pink.

Remarks.—The genus *Ellerkeldia* is a small group of serranid fishes consisting of 5 species confined to the southern Australia-New Zealand region. *E. rubra* is separable from the other members of the genus on the basis of the characters given in the following key.

Key to the species of *Ellerkeldia*

- | | | |
|---|---|-------------------------------|
| 1a. Body with series of 6-7 dark transverse bands (may be faint in preservative) | 2 | |
| 1b. Body without series of 6-7 dark transverse bands, either with horizontal stripe or mottled with irregular broken bands | 4 | |
| 2a. Soft dorsal rays 17-18; soft anal rays 7; dark bands distinct on both upper and lower half of sides (southern Queensland; New South Wales) | | <i>annulata</i>
(Günther) |
| 2b. Soft dorsal rays 20 to 21, soft anal rays 8; dark bands, except those on caudal peduncle, either absent or indistinct on lower portion of sides | 3 | |
| 3a. Greatest body depth 2.8 to 2.9 in standard length; dark bands usually well defined, confined mainly to upper sides (Lord Howe Island; New Zealand) | | <i>huntii</i> (Hector) |
| 3b. Greatest body depth 2.4 to 2.5 in standard length; dark bands usually not well defined (at least in preservative), extending well below middle of sides (New South Wales; Western Australia) | | <i>maccullochi</i>
Whitley |
| 4a. Colour mostly pale with faint to prominent longitudinal band on upper sides from snout to base of caudal; soft dorsal rays 19 (Western Australia) | | <i>rubra</i> n. sp. |
| 4b. Colour not as in 3a, dark olive-brown above and grey below, mottled with irregular broken transverse bands; soft dorsal rays 20 (southern Queensland; northern New South Wales) | | <i>jamesoni</i>
(Ogilby) |

In the Abrolhos Islands this species was occasionally encountered at the bottom of Goss Passage at depths between 25 and 35 metres. It was usually seen resting on the bottom at the entrance of small crevices of the coral reef or near the base of rocky outcrops or sponges. The holotype was the only individual observed outside of the deeper waters of Goss Passage. It was collected from a large patch of staghorn coral (*Acropora*) in only 3-4 metres depth.

This species is named *rubra* with reference to the red coloration in life.

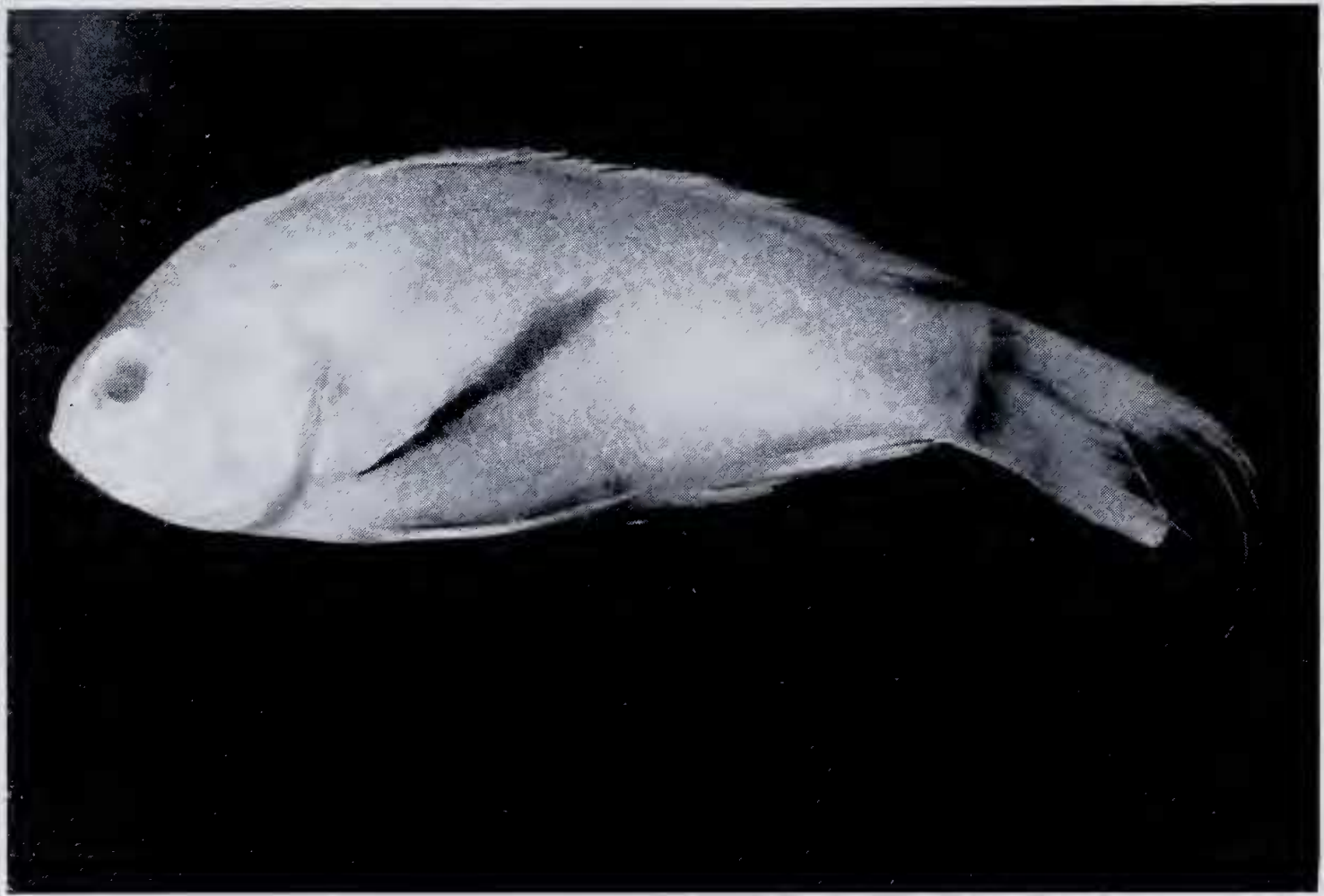


Figure 2.—*Anthias georgei*, holotype, 79.5 mm SL, off Bernier Island, Western Australia.

Table 2

Morphometric Proportions of Type Specimens of Anthias georgei
(In thousandths of the standard length)

Characters	Holotype WAM P25205-001	Paratypes	
		WAM P25205-002	WAM P25205-002
Standard length (mm)	79.5	32.8	29.0
Greatest body depth	392	390	366
Head length	345	375	331
Snout length	69	55	59
Eye diameter	108	125	141
Interorbital width	84	82	75
Length of maxillary	147	159	159
Least depth of caudal peduncle	143	143	159
Length of caudal peduncle	147	116	131
Snout to origin of dorsal fin	350	372	348
Snout to origin of anal fin	660	680	659
Snout to origin of pelvic fin	355	360	355
Length of dorsal fin base	629	595	572
Length of anal fin base	165	174	166
Length of pectoral fin	317	305	297
Length of pelvic fin	337	311	300
Length of 1st dorsal spine	57	55	66
Length of 3rd dorsal spine	167	122	131
Length of last dorsal spine	107	107	117
Tallest dorsal ray	197	183	159
Length of 1st anal spine	57	73	69
Length of 2nd anal spine	136	177	148
Length of 3rd anal spine	131	137	128
Longest soft anal ray	192	220	245
Length of caudal fin	574	*	545

* damaged

***Anthias georgei* n.sp.**

(Fig. 2; Table 2)

Holotype.—WAM P25205-001, 79.5 mm SL, collected with bottom trawl approximately 40 nautical miles west of Bernier Island, Western Australia (24°59'S, 112°27'E) in 71 fathoms by R. George and crew of "Diamantina" on 8 October 1963.

Paratypes.—WAM P25205-002, 2 specimens, 29.0 and 32.8 mm SL, collected with holotype.

Diagnosis.—A species of *Anthias* with the following combination of characters: two and a half to three rows of scales between middle of spinous dorsal fin and lateral-line; tubed lateral-line scales 39-40; gill rakers on first arch 10 or 11 + 22 to 26; third dorsal spine slightly elongate; caudal fin deeply forked with prolonged rays (at least in adult males); pectoral rays 18; body depth 2.5 to 2.7 in standard length; colour generally pale in preservative, probably reddish in life.

Description.—The proportional measurements of the holotype and paratypes are expressed as percentage of the SL in Table 2.

Dorsal rays X,16; anal rays III,7; pectoral rays 18; gill rakers on first arch 10 + 23 (11 + 25 or 26); tubed lateral-line scales 39 (39-40); horizontal scale rows from lateral-line to base of middle dorsal spines 2-3; from lateral-line to anus 16-17.

Body ovate and laterally compressed, the greatest depth 2.5 (2.6 to 2.7), head length 2.9 (2.7 to 3.0), both in standard length. Snout 5.0 (5.6 to 6.8), eye diameter 3.2 (2.3 to 3.0), inter-orbital width 4.1 (4.4 to 4.6), length of maxillary 2.3 (2.1 to 2.4), least depth of caudal peduncle 2.4 (2.1 to 2.6), length of caudal peduncle 2.3 (2.5 to 3.2), of pectoral fin 1.1 (1.1 to 1.2), of pelvic fin 1.0 (1.1 to 1.2), of first dorsal spine 6.1 (5.1 to 6.8), of third dorsal spine 2.1 (2.5 to 3.1), of last dorsal spine 3.2 (2.8 to 3.5), of longest soft dorsal ray 1.7 (2.1), of first anal spine 6.1 (4.8 to 5.1), of second anal spine 2.5 (2.1 to 2.2), of third anal spine 2.6 (2.6 to 2.7), of longest soft anal ray 1.8 (1.4 to 1.7), of caudal fin 0.6 (0.6 to 1.1), all in the head length.

Pair of nasal openings on each side of snout, anterior opening with dermal flap on posterior edge; mouth large, oblique, with lower jaw protruding slightly; lateral-line gradually ascending to within 2-3 scales below middle dorsal spines, then gradually descending to middle of side of caudal peduncle, proceeding to base of caudal fin; area around nostrils, lips, chin, and isthmus naked; remainder of head (including maxillary) and body with finely ctenoid scales; sheath scales covering about basal $\frac{1}{2}$ - $\frac{2}{3}$ of soft dorsal, anal, caudal, and pectoral fins; rear edge of preopercle serrate, several serrae present on exposed edge of subopercle and interopercle; opercle with three spines, the uppermost blunt and inconspicuous.

Upper jaw with inner band of small depressible canines and outer row of larger, fixed canines; pair of large tusks on each side at front corner of jaw and a pair of equally large inner

teeth on either side of median diastema. Anterior portion of lower jaw with dense patch of small villiform teeth and 1-2 large, laterally flared tusks on each side at front corner; 1-2 large tusks near middle of each dentary with row of small depressible canines on posterior part of jaw.

Colour of holotype in ethyl alcohol; head and body generally pale (yellowish-tan), slightly reddish on upper portion of head and back; faint suggestion of three pale stripes on sides, each about one scale wide, first just below lateral-line, second at level of upper corner of opercle, third at level of lowermost pectoral rays; fins uniformly pale.

The two paratypes, which are juveniles, are uniformly pale with several rows of small brown spots below the spinous dorsal fin.

Remarks.—*A. georgei* appears to be allied to *A. conspicuus* Heemstra and *A. townsendi* Boulenger from the western Indian Ocean and Arabian Sea. These species were reviewed by Heemstra (1973) and are characterised by 2-3 scales between the lateral-line and the base of the middle dorsal spines, 37-41 tubed lateral-line scales, and 15-17 soft dorsal rays. *A. georgei* differs from *A. conspicuus* by having the third dorsal spine slightly elongate rather than subequal, and the caudal fin deeply forked with prolonged filaments instead of lunate. In addition, there is a significant colour difference. The holotype of *A. georgei* possesses elongate whitish gonads and is therefore presumed to be a male. The males of *A. conspicuus* have two wide, dark stripes on the sides, which join on the caudal fin in contrast to the complete absence of distinguishing marks on *A. georgei*. *A. townsendi* differs by being less deep bodied (2.9-3.2 vs. 2.5-2.7 in SL), and by having a rounded rather than acute anal fin tip, and a lunate caudal.

Named in honour of Dr. Ray W. George, Curator of Crustacea at the Western Australian Museum and collector of the only known specimens.

Family Mugiloididae

***Parapercis biordinis* n.sp.**

(Fig. 3)

Holotype.—WAM P25206-001, 70.0 mm SL, collected with beam trawl southwest of Point Cloates, Western Australia (22°59'S, 113°25'E) in 71 fathoms by C.S.I.R.O. research ship on 31 January 1964.

Diagnosis.—A species of *Parapercis* with the following combination of characters: palatine teeth absent; 6 or 7 teeth in outer row of lower jaw; last dorsal spine connected by membrane to first dorsal ray opposite tip of last dorsal spine; five dorsal spines; about 24 zigzag rows of scales around caudal peduncle; lateral-line scales 54; colour largely pale with 4-5 pairs of brown spots along sides and four spots on caudal fin.

Description.—Dorsal rays V,21; anal rays I, 18; pectoral rays 18; pelvic rays I,5; branched caudal rays 15; gill rakers on first arch 5 + 12

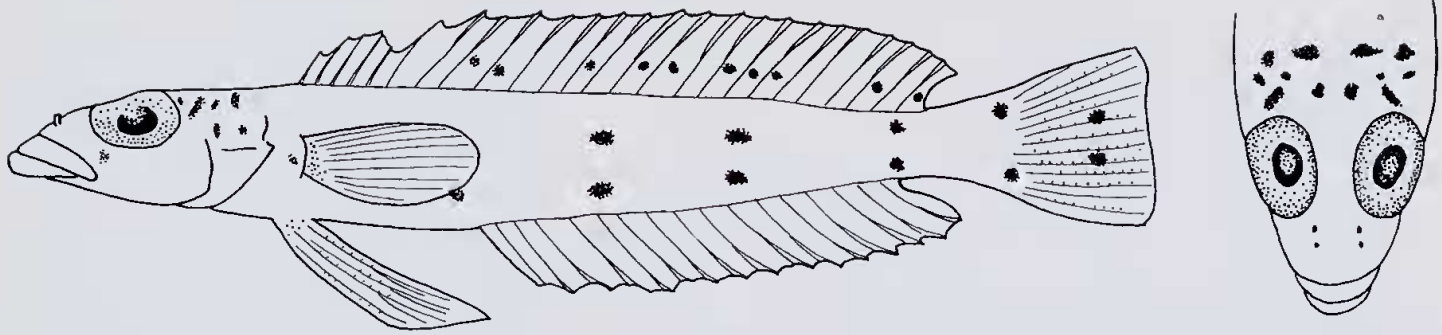


Figure 3.—*Parapercis biordinis*, holotype, 70.0 mm SL, off Point Cloates, Western Australia (scales not shown). The pattern of dark spots on the dorsal surface of the head is shown in the drawing on the right.

= 17; lateral-line scales from upper edge of gill opening to base of caudal fin 54; horizontal scale rows from lateral-line to base of first dorsal spine 3; from lateral-line to anus about 8 (most are missing on the holotype); predorsal scales 7-8.

The following measurements (in mm) were recorded for the holotype (only known specimen): length of head 20.0 (3.5 in SL); length of snout 5.0 (4.0 in HL); diameter of eye 7.5 (2.7 in HL); postorbital length of head 8.5 (2.4 in HL); interorbital width 2.0 (10.0 in HL); snout tip to rear edge of maxillary 7.7 (2.6 in HL); least depth of caudal peduncle 5.7 (3.5 in HL); greatest depth of body 9.5 (7.4 in SL); length of fourth dorsal spine 4.9 (4.1 in HL); longest pectoral ray 14.2 (1.4 in HL); longest pelvic ray 16.4 (1.2 in HL); longest caudal ray 13.8 (1.4 in HL); length of dorsal fin base 42.3 (1.7 in SL); length of anal fin base 29.5 (2.4 in SL).

Teeth absent on palatines, vomer with 8 relatively large conical teeth arranged in a single row; lower jaw with outer row of 6 or possibly 7 (count includes 1 and possibly 2 teeth which are missing) hooked canine teeth on anterior-most portion, inside these a band of villiform teeth and a single row of smaller canines on the side of each dentary; upper jaw with about 56 canines in outer row and inside these a dense band of villiform teeth.

Scales of body mostly ctenoid, those of preopercle region relatively small, embedded, and cycloid; occipital, interorbital, and snout naked.

Colour of holotype in ethyl alcohol: head and body mostly yellowish-tan; scales on upper part of body with dusky edges; a series of diffuse brown spots, about pupil size, on sides; the first at level of middle dorsal spines, just below lateral-line, the remainder occurring in 4 pairs at equal intervals below soft dorsal fin (except for first pair, which both lie below lateral-line, the members of each pair are separated by the lateral-line); caudal fin with 2 pairs of similar spots, one at base of fin and the other near the centre; pectoral base with faint brown streak; series of dark markings (see Fig. 3) on nape and upper part of opercle; faint brown streak below lower anterior corner of eye connecting suborbital and maxillary; small brown spots on soft dorsal fin as shown in Fig. 3.

Remarks.—Cantwell (1964) revised the genus *Parapercis* and Schultz (1968) published a supplemental paper with a key to the Indo-Pacific

members of this group and descriptions of four new species. On the basis of coloration and the combination of other characters listed in the diagnosis, *P. biordinis* is distinct from the 32 species treated by these authors. They recorded four species from Western Australia: *P. allporti* (Günther); *P. emeryana* (Richardson); *P. haackei* (Steindachner); and *P. nebulosa* (Quoy and Gaimard). In addition, the WAM recently received a specimen (WAM P25342-002) of *P. ramsayi*, 146 mm SL, which was trawled off Cape Naturaliste, and two specimens (WAM P24582 and P25367-006) of *P. cephalopunctata*, 56-125 mm SL, collected at North West Cape and the Dampier Archipelago. These represent new records for Western Australia; the latter species, which ranges widely in the Indo-W. Pacific, is also new for Australia. *P. ramsayi* was previously recorded from New South Wales and South Australia. The species presently known from Western Australia are distinguished in the following key.

Key to the species of *Parapercis* from Western Australia

- 1a. Palatine teeth present 2
- 1b. Palatine teeth absent 3
- 2a. Dorsal rays V,22; 10 teeth in outer row of lower jaw; last dorsal fin spine connected by membrane to base of first soft dorsal ray; lower portion of sides without row of seven spots *haackii* (Steindachner)
- 2b. Dorsal spines IV,24; 8 teeth in outer row of lower jaw; last dorsal fin spine connected by membrane to first soft dorsal ray at about level of tip of last dorsal spine; lower portion of sides with row of seven large spots *ramsayi* Steindachner
- 3a. Last dorsal fin spine connected by membrane to base of first soft dorsal ray; horizontal scale rows between lateral-line and first dorsal spine 8-10; soft dorsal rays 22; zigzag row of scales around caudal peduncle 35-44 4
- 3b. Last dorsal fin spine connected by membrane to first soft dorsal ray at about level of tip of last dorsal spine; horizontal scale rows between lateral-line and first dorsal spine 3-5; soft dorsal rays 21; zigzag row of scales around caudal peduncle 24-29 5

- 4a. Total gill rakers 17-20; oblique scale rows above lateral-line 70-77; 3 dark stripes across interorbital space; 5 V-shaped dark bars below dorsal fins, but no broad, light, lengthwise streak with dark edge along middle of side, interrupting the dark bars .. *emeryana* (Richardson)
- 4b. Total gill rakers 11-17 (usually 13-14); oblique scale rows above lateral-line 77-87; no dark stripe across interorbital space; dark bars somewhat V-shaped below dorsal fins, interrupted along middle of side by dark-edged, broad, light streak *nebulosa* (Quoy and Galmard)
- 5a. Lower portion of sides with a single row of 10 dark spots, about pupil size, extending horizontally from lower pectoral base to lower caudal peduncle; a dark spot or ocellus on each side of head just above opercle on larger specimens (over about 130 mm SL); vomerine teeth in 2 rows *cephalopunctata* (Scale)
- 5b. Colour pattern not as in 5a; vomerine teeth in 1 or 3 rows 6
- 6a. Eight vomerine teeth in 3 horizontal rows (2 + 4 + 2); sides with seven dark bars, the anterior four extending from dorsal fin base to below lateral-line, the posterior three above the lateral-line; no markings on caudal and dorsals fins *allporti* (Günther)
- 6b. Eight vomerine teeth in a single row; sides with 4-5 pairs of spots; 2 pair of similar spots on caudal and several small spots on basal part of soft dorsal fin *biordinis* n.sp.

This species is named *biordinis* (Latin; "double-row") referring to the double row of spots along the sides.

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